



ASIIN Seal

Accreditation Report

Bachelor's Degree Programmes

Physics

Mechanical Engineering Education

Provided by

Universitas Sebelas Maret

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Table of Content

A About the Accreditation Process.....	3
B Characteristics of the Degree Programmes	5
C Peer Report for the ASIIN Seal	8
1. The Degree Programme: Concept, content & implementation	8
2. The degree programme: structures, methods and implementation.....	14
3. Exams: System, concept and organisation.....	19
4. Resources	21
5. Transparency and documentation.....	24
6. Quality management: quality assessment and development	26
D Additional Documents	28
E Comment of the Higher Education Institution (03.02.2022)	29
F Summary: Peer recommendations (15.02.2022)	39
G Comment of the Technical Committees	41
Technical Committee 13 – Physics (09.03.2022)	41
Technical Committee 01 – Mechanical Engineering/Process Engineering (07.03.2022)	41
H Decision of the Accreditation Commission (18.03.2022)	42
I Fulfilment of Requirements (24.03.2023).....	43
Analysis of the peers and the Technical Committees.....	43
Decision of the Accreditation Commission (24.03.2023)	47
J Fulfilment of Requirements (22.09.2023).....	48
Analysis of the experts and the Technical Committees (08.09.2023)	48
Decision of the Accreditation Commission (22.09.2023)	54
Appendix: Programme Learning Outcomes and Curricula	56

A About the Accreditation Process

Name of the degree programme (in original language)	(Official) English translation of the name	Labels applied for ¹	Previous accreditation (issuing agency, validity)	Involved Technical Committees (TC) ²
Program Studi Fisika (S.Si.)	Bachelor's degree programme in Physics	ASIIN	/	13
Program Studi Pendidikan Teknik Mesin (S.Pd.)	Bachelor's degree programme in Mechanical Engineering Education	ASIIN	/	01
<p>Date of the contract: 30.10.2020</p> <p>Submission of the final version of the self-assessment report: 23.08.2021</p> <p>Date of the onsite visit: 02.-04.11.2021</p> <p>By videoconference</p>				
<p>Peer panel:</p> <p>Prof. Dr.-Ing. Joachim Frech, Baden-Wuerttemberg Cooperative State University</p> <p>Prof. Dr. Axel Haase, Technical University of Munich</p> <p>Dr. Albert Leiß, prev. Infracor GmbH</p> <p>Felix Cahyadi, Student at Institut Teknologi Bandung</p>				
<p>Representative of the ASIIN headquarter: Jan Philipp Engelmann</p>				
<p>Responsible decision-making committee: Accreditation Commission</p>				

¹ ASIIN Seal for degree programmes.

² TC: Technical Committee for the following subject areas: TC 01 - Mechanical Engineering/Process Engineering; TC 13 - Physics.

<p>Criteria used:</p> <p>European Standards and Guidelines as of May 15, 2015</p> <p>ASIIN General Criteria, as of December 10, 2015</p> <p>Subject-Specific Criteria of Technical Committee 01 – Mechanical Engineering/Process Engineering as of March 16, 2021</p> <p>Subject-Specific Criteria of Technical Committee 13 – Physics as of March 20, 2020</p>	
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B Characteristics of the Degree Programmes

a) Name	Final degree (original/English translation)	b) Areas of Specialization	c) Corresponding level of the EQF ³	d) Mode of Study	e) Double/Joint Degree	f) Duration	g) Credit points/unit	h) Intake rhythm & First time of offer
Physics	Sarjana Sains (S.Si.)/ Bachelor of Science	/	6	Full time	/	8 semesters	144 SKS (around 216 ECTS)	Yearly, 1997
Mechanical Engineering Education	Sarjana Pendidikan (S.Pd.)/Bachelor of Education	Manufacturing, Automotive	6	Full time	/	8 semesters	144 SKS (around 216 ECTS)	Yearly, 1976

For the **Bachelor's degree programme Physics** the institution has presented the following profile on the website of the programme:

Vision:

“To excel in basic education and research as well as applied physical sciences with international reputation based on local culture”

Missions:

1. Conducting the physics learning process with international standards.
2. Conducting research activities in the field of physics with international standards.
3. Conducting community service based on learning outcomes and research in physics.

Goals:

1. Produce graduates who:
 - Mastering the theoretical concepts of Physics in general and the theoretical concepts of a special section in the field of physics in depth.
 - Able to formulate procedural problem solving.

³ EQF = The European Qualifications Framework for lifelong learning

- Able to apply and utilize physics in solving problems in the form of research and be able to adapt to the situation at hand
 - Able to make correct decisions based on analysis of information and data, able to provide guidance in choosing various alternative solutions independently and in groups.
 - is responsible for his own work and can be given responsibility for the achievement of the work of the organization.
 - Able to perform community service by utilizing the results of research and learning.
2. Producing international quality research for the national interest.
 3. To disseminate the results of education, teaching and research to the community so that there will be a sustainable transformation for a more prosperous life.

For the **Bachelor's degree programme Mechanical Engineering Education** the institution has presented the following profile on the website of the programme:

Vision

“Becoming a Reference for Mechanical Engineering Education Study Programs at the Regional Level Based on the Noble Values of the National Culture”

Mission

1. Organizing education, learning, and guidance effectively to produce educators in the field of mechanical engineering who are superior, highly competitive, and independent graduates in mechanical engineering.
2. Carry out research and development that supports the implementation of education and learning for the benefit of humans;
3. Carrying out community service activities oriented towards increasing the professionalism of vocational high school teachers in mechanical engineering.

Purpose

1. Producing mechanical engineering education graduates with a high cumulative grade point average and integrity as educators with national and international recognition.

B Characteristics of the Degree Programmes

2. Producing graduates who can apply knowledge and expertise in mechanical engineering education based on the national culture's noble values.
3. Conducting research and development in mechanical engineering education beneficial to science and humanity.
4. Increasing community service in quality and quantity, especially in mechanical engineering education.

C Peer Report for the ASIIN Seal

1. The Degree Programme: Concept, content & implementation

Criterion 1.1 Objectives and learning outcomes of a degree programme (intended qualifications profile)

Evidence:

- Self-Assessment Report
- Study plans of the degree programmes
- Module descriptions
- Webpage Ba Physics: <https://fisika.mipa.uns.ac.id/en/>
- Webpage Ba Mechanical Engineering Education: <https://ptm.fkip.uns.ac.id/en/>
- Discussions during the audit

Preliminary assessment and analysis of the peers:

UNS has described and published programme educational objectives (PEO) and programme learning outcomes (PLO) for each of the degree programmes. While the PEO are developed based on the vision and mission of the university as well as the respective faculty and are rather general and concise, the PLO describe in greater detail the competences, which the students should acquire during their studies. By means of being published on the websites of the degree programmes, the PEO and PLO are easily accessible for students as well as other stakeholders. Furthermore, there are regular revision processes in place that take into account feedback by employers and alumni. In line with national regulations, a major revision of the curricula including consultations of stakeholders takes place every five years.

The peers base their assessment on the learning outcomes as detailed in the Self-Assessment Report of the two Bachelor's degree programmes under review. They refer to the Subject-Specific Criteria (SSC) of the Technical Committees Physics and Mechanical Engineering/Process Engineering as a basis for judging whether the intended learning outcomes of the programmes as defined by UNS correspond with the competences as outlined by the SSC. They come to the following conclusions:

The learning outcomes of both programmes contain the general aspects that graduates should be able to communicate effectively, to work in teams, to act ethically and responsibly and to be committed to lifelong learning. Beyond that, they encompass specific competences for each of the two programmes.

The goal of the Bachelor's degree programme Physics (PSP) is to impart fundamental competences in mathematics, general natural sciences, and particularly in the different areas of physics. Graduates should be able to understand, formulate and solve basic problems in physics by applying the relevant mathematical, computational, and experimental methods. They should be capable of using these methods in interdisciplinary and practical contexts. Moreover, they should be familiar with scientific methods and be able to present problems and their solutions orally and in writing. Given this broad profile, graduates are employed in many different fields. UNS's tracer study shows that around 24 % work as researchers or experts, 23 % as educators, 21 % as civil servants, 18 % as entrepreneurs, and 13 % continue their studies for a Master's degree.

Graduates of the Bachelor's degree programme Mechanical Engineering Education (MEEP) should primarily be able to become teachers at vocational high schools. For this purpose, they should have the competences to design curricula, to lay out and implement teaching and learning activities by employing a variety of instruction and assessment strategies and methods. Besides these educational skills, graduates should also be able to operate and maintain machines, to design mechanical components and systems and to analyse problems in mechanical engineering. Based on this profile, UNS's tracer study shows that the majority of graduates (55 %) work as educators, whereas 20 % work as entrepreneurs, 13 % are employed in manufacturing, and 6 % continue their studies for a Master's degree.

Based on the Self-Assessment Report and the discussions during the online audit, the peers see that the graduates of both programmes under review acquire the subject-specific competences defined in the SSC of the Technical Committees for Physics and Mechanical Engineering/Process Engineering respectively, as well as general skills, which are useful for their later professional life. They are convinced that the intended qualification profiles of the programmes allow graduates to take up an occupation that corresponds to their qualification. This is confirmed by the tracer studies, which show that graduates are usually able to find a job shortly after graduation. Employers confirm, both in the tracer studies and in the discussions, that the graduates are well suited for their positions. In slight contrast to this, only 22 % of PSP graduates and 45 % of MEEP graduates consider their position and their study programme to be closely related. The peers are convinced that this is due to the broad spectrum of employment mentioned above and they do not regard this as a problem, especially since 60 % and 42 % respectively of graduates see their job and study programme as somewhat related.

Only a small percentage of graduates pursue a Master's degree, as is typical for Indonesian universities. However, based on the discussion with students and alumni, some of whom are currently studying or have studied for a Master's degree, the peers are convinced that students obtain solid basic knowledge and skills in the relevant areas of both subjects, which adequately prepare them for further studies.

The peers conclude that the objectives and intended learning outcomes of the degree programmes adequately reflect the intended level of academic qualification and correspond sufficiently with the SSC of the Technical Committees for Physics and Mechanical Engineering/Process Engineering. The degree programmes are designed in such a way that they meet the goals set for them. The objectives and intended learning outcomes of both degree programmes under review are reasonable and well founded.

Criterion 1.2 Name of the degree programme

Evidence:

- Self-Assessment Report

Preliminary assessment and analysis of the peers:

The peers confirm that the English translation and the original Indonesian names of both degree programmes under review correspond with the intended aims and learning outcomes as well as the main course language (Indonesian).

Criterion 1.3 Curriculum

Evidence:

- Self-Assessment Report
- Study plans of the degree programmes
- Module descriptions
- Webpage Ba Physics: <https://fisika.mipa.uns.ac.id/en/>
- Webpage Ba Mechanical Engineering Education: <https://ptm.fkip.uns.ac.id/en/>
- Discussions during the audit

Preliminary assessment and analysis of the peers:

The curricula of the degree programmes are designed to implement the programme objectives and learning outcomes and they are subject to constant revision processes (see chapters 1.1 and 6). As such, the curricula are reviewed regularly and commented on by students and teachers as well as by external stakeholders such as alumni or partners from the private sector, high schools and other universities. Regular changes are made to ensure that the curricula are up to modern standards.

The programmes under review are offered by the Faculty of Mathematics and Science (PSP) and the Faculty of Teacher Training and Education (MEEP). They are designed for eight semesters or four years, in which the students have to achieve at least 144 credit points (SKS), which is equivalent to approximately 216 ECTS points (see chapter 2.2 for more details). The maximum period of study is 14 semesters. Each semester is equivalent to 16 weeks of learning activities including one week for midterm exams and one week for final exams. The odd semester starts in August and ends in January of the following year, while the even semester lasts from February to July.

The curricula of both programmes consist of university requirements and compulsory and elective courses determined by UNS and the respective faculties and departments. University requirements are courses that need to be attended by all undergraduate students at UNS, some of which rely on national regulations. There are eight university requirements: Bahasa Indonesia, Religious Education, Civic Education, Entrepreneurship, Pancasila, Community Service, an internship and a final project. These courses run in parallel to the subject-specific courses over the entire course of the programmes.

Besides these and some fundamental courses in mathematics, statistics, biology and chemistry that teach the students general scientific competences and that lay a common foundation, the majority of the courses of the Bachelor's degree programme Physics cover the usual subject areas in accordance with international standards both in theoretical and experimental physics. Moreover, the students can choose elective courses from the areas of materials physics, theoretical and computational physics, electronics and instrumentation, medical physics, geophysics and acoustics.

The Bachelor's degree programme Mechanical Engineering Education combines compulsory courses from various areas of mechanical engineering – such as fluid mechanics, thermodynamics and heat transfer, technical drawing and CAD or machines and machine tools – with courses that cover educational aspects such as pedagogical fundamentals, learning and teaching methods or curriculum development. Moreover, MEEP students have to choose one of two specialisations, Manufacturing or Automotive, that come with a series of related courses starting from the fourth semester. In semesters 6 and 7, they can additionally choose elective courses related to mechanical engineering.

Based on the Self-Assessment Report and the discussions, the peers see that both programmes reasonably combine theoretical and practical elements, with a ratio of roughly 2:1. Besides the practical university courses, PSP contains a compulsory internship in the sixth semester, MEEP an industrial internship in semester 6 and a teaching internship in semester 7. The peers appreciate that these internships are there, but consider them very important for the students' professional orientation and think that they come quite late in the programmes for this purpose. Therefore, they recommend giving the students earlier insights into the labour market in both programmes. This

could be done by adding additional internships or by using more guest lecturers from professional practice.

Concerning MEEP, the peers welcome the high number of courses dealing with matters of pedagogy and teaching, some of which include teaching exercises at university. However, as actual teaching in front of a real class of students is a very different matter, the peers think that the students would benefit from doing this more and earlier. Hence, they suggest for UNS to provide the students with more such opportunities, be it through additional internships or integrated into existing practical courses.

Besides these minor issues, the peers see that the curricula of both programmes are generally suitable to achieve the intended learning outcomes as defined by UNS. They cover all important areas of the respective subject and allow the students to specialise to a certain degree in accordance with their interests.

Since UNS has the goal to become internationally more visible and wants to further internationalise its degree programmes, the peers discuss with the programme coordinators and students if any classes in the programmes are taught in English. The programme coordinators explain that all courses are delivered in Indonesian language, but many of the teaching materials (textbooks, slides) are provided in English. As the peers consider active communication in English particularly important for the students, both for future jobs and to facilitate student mobility, they recommend offering some courses in English to practice this skill.

Overall, the peers gain the impression that the curricula of both programmes are reasonably structured and contribute to the achievement of the intended learning outcomes. In their assessment, graduates are well prepared for entering the labour market and can find adequate jobs in Indonesia.

Criterion 1.4 Admission requirements

Evidence:

- Overview of evolution of the total applicants, accepted and registered students in each degree programme between 2016 and 2019
- Admission requirements for prospective students through 3 entrance tests
- Self-Assessment Report
- Admission Website: <https://spmb.uns.ac.id/>
- Discussions during the audit

Preliminary assessment and analysis of the peers:

According to the self-assessment report, admission of new students to UNS is possible via different modes of entry (national and local modes). The different modes of entry are designed not only to select the top-quality students from high schools, but also to provide opportunities for high school students from all over Indonesia, especially those from rural areas.

There are three different ways by which students can be admitted to a Bachelor's programme at UNS:

1. National Entrance Selection of State Universities (Seleksi Nasional Masuk Perguruan Tinggi Negeri, SNMPTN), a national admission system, which is based on the academic performance during the high school (30 % of the students at UNS are admitted through this selection system).
2. Joint Entrance Selection of State Universities (Seleksi Bersama Masuk Perguruan Tinggi Negeri, SBMPTN). This national selection test is held every year for university candidates. It is a nationwide written test (subjects: mathematics, Bahasa Indonesia, English, physics, chemistry, biology, economics, history, sociology, and geography). It accounts for 40 % of the admitted students at UNS.
3. Independent Selection (Seleksi Mandiri) students are selected based on a written test (similar to SBMPTN) specifically held by UNS for prospective students that have not been accepted through SNMPTN or SBMPTN (30 % of the students at UNS are admitted through this test).

For each academic year, UNS determines the ratio of students admitted through these three ways. Generally, the number of applications is considerably higher than the number of admitted students. For the academic year 2020/21, the ratio is around 1:6 for PSP and 1:8 for MEEP.

The tuition fees for the programmes are determined by the Ministry of Finance based on a proposal from UNS. There are different levels for these fees, depending on the parents' income. These range from 475,500 Rp. (around 29 €) to 10,522,500 Rp. (around 650 €) per semester. Furthermore, there are various options for scholarships that cover the tuition fees.

The admission website informs potential students in great detail about the requirements and the necessary steps to apply for admission into the programmes. Since the rules are based on decrees by the ministry of education and on the university's written regulations, the peers deem them binding and transparent. They confirm that the admission requirements support the students in achieving the intended learning outcomes.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 1:

The peers thank UNS for its comments on internships and the use of English in the curriculum. They appreciate the fact that the university plans to deliver some courses in English so that students can

improve their active communication skills. However, while in PSP the university plans to offer five compulsory courses in English, the courses mentioned in MEEP are largely electives, so not all students will have many opportunities to practise their English skills. Therefore, the peers suggest further enhancing the number of courses delivered in English as part of UNS's internationalisation strategy.

The peers consider criterion 1 fulfilled.

2. The degree programme: structures, methods and implementation

Criterion 2.1 Structure and modules

Evidence:

- Self-Assessment Report
- Study plans of the degree programmes
- Module descriptions
- Academic Guidelines
- Discussions during the audit

Preliminary assessment and analysis of the peers:

The curricula of both Bachelor's degree programmes under review are designed for eight semesters. Average students take 18 credits in every semester, while outstanding students may take up to 24 credits. Therefore, outstanding students are able to complete the Bachelor's degree in less than 4 years. However, this case is rare since the workload of the undergraduate programmes is rather high and the curricula are designed for four years. The students' individual study plans can be different from each other, but have to be approved by their academic advisors. The curricula include theoretical and practical courses, thesis, community service, and electives.

After analysing the module descriptions and the study plans, the peers confirm that both degree programmes under review are divided into modules and that each module is a sum of coherent teaching and learning units. The programmes allow the students to define individual focuses through broad ranges of electives (see the study plans in the appendix).

According to data provided by UNS, the average time that students need to graduate is slightly below 4.5 years (MEEP) or slightly above 4.5 years (PSP). Despite the fact that only very few students do not successfully finish their studies, this means that there is a significant percentage of

students who need more than four years to finish their studies. The peers suspect that the main reason for this lies in the structure of the final thesis. As they learn during the discussions, students typically already start working on the thesis in the seventh semester, parallel to other courses, and then dedicate their entire eighth semester to it, in which no other courses are scheduled. Overall, the thesis takes six to eight months to complete. However, it is only awarded with 6 SKS (around 10 ECTS points). Although the peers are not sure how much time the students actively spend on their final projects during this time, this number appears to be too low. Therefore, the peers suggest that UNS evaluate the students' actual workload for the final projects. Based on the result, the number of credit points should be adjusted. Moreover, the peers are surprised that the final semester currently only contains the thesis and thus features far fewer credit points than an average semester, even if the thesis would be given more weight. They would like UNS to consider how this final semester can best be used, taking into account the mentioned workload evaluation.

In summary, the peers gain the impression that, despite the mentioned issues, the choice of modules and the structure of the curriculum ensures that the intended learning outcomes of the respective degree programme can be achieved.

International Mobility

UNS provides opportunities for students to conduct internships and exchange programmes abroad. The university's International Office supports the students and offers information on their options for student mobility. There are cooperation agreements with many international universities to facilitate exchange and credit transfer. Besides programmes by the Indonesian government, UNS has established its own competitive funding scheme for international mobility that covers travel cost, institutional fees of host universities as well as cost of living. From 2016 to 2021, around 230 students participated in this programme. Moreover, UNS has established a programme for internships in Southeast Asia.

The new policy of the Indonesian government actively supports any activities outside of the university by releasing a regulation on the Merdeka Belajar-Kampus Merdeka (MBKM), which requires the university to promote students who want to take outside their Bachelor's programme for up to three semesters (Minister of Education and Culture Regulation Number 3 Year 2020). UNS recognizes the courses taken by the students outside university based on the equality of the intended learning outcomes. The peers consider this regulation sufficient. However, according to the opinion of the peer group, the academic mobility of the students should be further promoted. The number of students from the two programmes under review who participate in international exchange programmes is still quite low and the stays are mostly quite short, typically up to one month. Furthermore and in contrast to UNS's strategy, there are currently only very few incoming exchange students, which is related to the lack of courses offered in English (see chapter 1.3).

The students confirm during the discussion with the peers that some opportunities for international academic mobility exist. However, they also point out that they wish for better information, more places and better endowed scholarships for long and short-term stays abroad. The number of available places in the exchange programmes is still limited and there are restrictions due to a lack of sufficient financial support. The lack of financial support is one of the most important factors that hinder students from joining the outgoing programmes.

Based on this feedback, the peers recommend increasing the effort to further internationalise UNS by establishing more international collaborations and exchange programmes (with lectures in English for incoming students), providing more information to the students and by offering more and better-endowed scholarships. In summary, the peers appreciate the efforts to foster international mobility and support the university in further pursuing this path.

Criterion 2.2 Work load and credits

Evidence:

- Self-Assessment Report
- Study plans of the degree programmes
- Module descriptions
- Discussions during the audit

Preliminary assessment and analysis of the peers:

Based on the National Standards for Higher Education of Indonesia (SNPT), both undergraduate programmes under review use a credit point system called SKS. The minimum workload of an undergraduate programme at UNS is 144 SKS, which corresponds to 6.528 academic hours or 216 ECTS (calculating with 30 hours per ECTS). The normal workload of each regular semester is 816 hours, which corresponds to 18 SKS (27 ECTS).

To complete the degree programme in time, Bachelor students need to take on average of 18 SKS per semester. However, the regular schedule usually covers 20-21 SKS per semester, which results in a lower credit load of the last semester (see above). If a student is not satisfied with his/her GPA, she or he can repeat the classes, but this will lead to a prolongation of the study time.

1 SKS of academic load is equivalent to 170 minutes per semester week. For regular courses, this means 50 minutes of face-to-face activity, 60 minutes of structured tasks and 60 minutes of independent learning per semester week. For thesis and internship, 1 SKS equals 170 minutes of the respective activity per semester week.

As has already been mentioned, based on the available data, students typically need between eight and nine semesters finish their studies. The students confirm that the overall workload is high but manageable. As the lecturers explain, the workload for assignments and individual study in each

course is estimated by the lecturers based on their experience. Besides the final thesis (see chapter 2.1), the peers consider the workload and the awarded credit points appropriate.

Criterion 2.3 Teaching methodology

Evidence:

- Self-Assessment Report
- Module descriptions
- Discussions during the audit

Preliminary assessment and analysis of the peers:

The programmes under review make use of several different educational methods for each course such as interactive lectures, small group discussions, problem-based learning, collaborative learning, laboratory practical work, computer-based assignments, seminars, case-study, literature studies as well as excursions, internships, student community services, and final projects.

During the classes, active and interactive teaching methods (e.g. lectures, discussions, reports, presentations, and group work) are applied. UNS wants to encourage the students to gain knowledge from different scientific areas and wants to introduce them to research activities. This leads to the transition from a teacher centred to a student centred learning approach. The teaching and learning is supported by a broad range of media, both traditional (books, papers) and online (videos, presentations etc.). In the course of the Covid-19 pandemic, UNS has swiftly switched to online learning with videoconferences, recorded videos and other media. Online learning is conducted by using WhatsApp group chats, Google Classroom, Zoom or Google Meet sessions.

UNS introduced an online-learning platform SPADA in order to monitor the teaching methodology that is applied and make accessible the various course materials. Therefore, each teacher or professor must upload his or her teaching materials and working procedures on SPADA.

In summary, the peer group judges the teaching methods and instruments to be suitable for supporting the students in achieving the intended learning outcomes.

Criterion 2.4 Support and assistance

Evidence:

- Websites
- Self-Assessment Report
- International Students Guide
- Discussions during the audit

Preliminary assessment and analysis of the peers:

In order to support students in completing their studies on time with good achievements, the university and the faculty provide academic and personal support and assistance through various means. The offers can be divided into two types: academic support and non-academic support. Academic advice includes the academic advisors, the Counselling Guidance Centre, the International Office, the programme coordinators, the Dean and the supervisors for the Bachelor's thesis. Non-academic supports comprises the Medical Centre, the Sports Centre, the Disability Study Centre, the Language Centre, the Career Development Centre, the Central Library, computer laboratories, Student Creativity Program and student dormitories.

The main contact person for every student is their academic advisor, which is assigned to them in their first semester. An academic advisor shall help them develop an adequate schedule for their studies, choose electives according to their skills and interests and support them in case of academic and non-academic problems. Each student has the opportunity to meet their academic advisor, who is also responsible for monitoring their study progress, on a regular basis. Furthermore, there are supervisors for the thesis, the fieldwork practice or teaching internship, and the community service, who give advice on specific issues related to these aspects. In UNS, this mentoring process is supported by the presence of the academic administration information system (SIKAD) that helps to monitor the academic progress and to approve semester plans as well as the final undergraduate thesis.

The Disability study Centre helps and guides students who have individual problems, such as anxiety, depression or other personal or psychological issues. The Career Development Centre offers scholarships, entrepreneurship programmes, student creativity programmes and other similar activities. There are many scholarships offered to students, (e.g. from private companies, the government or other foundations). This includes scholarship for students from low-income families and for those with high academic achievements. New students can attend classes to develop their effective learning and soft skills.

In addition, every student who enrolls for the Bachelor's thesis course will be assigned two to three thesis supervisors. The role of the thesis supervisors is to help students to complete their thesis research; they also monitor the progress of the thesis in order to ensure the completion of the thesis in the intended amount of time.

The students confirm towards the peers that they are supervised in the research group during their work on the Bachelor's thesis. There are regular meetings where the students present their results and receive feedback from the other members.

All students at UNS have access to the online-learning platform SPADA. By using SPADA, lecturers can upload their syllabus and learning materials or modules as well as assignment for students.

Through SPADA, students can also interact with other students and lecturers.

The peers notice the good and trustful relationship between the students and the teaching staff; there are enough resources available to provide individual assistance, advice and support for all students. The support system helps the students to achieve the intended learning outcomes and to complete their studies successfully and without delay. The students are well informed about the services available to them.

Overall, the peers judge the extensive support system to be one of the strong points of UNS.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 2:

The peers thank UNS for its comments on international mobility and the duration and workload of the final thesis. The example of a thesis timeline provided by the university confirms that the regular duration is six months. However, the 6 SKS that are currently awarded for the thesis, correspond to only 272 hours of student workload (16 semester weeks x 170 minutes x 6 SKS). This would mean that students only work on their theses for around 11 hours per week, which seems unlikely given that they mostly do not have any other courses in the final semester. Consequently, the peers urge UNS to ensure that the credit points awarded for the thesis corresponds to the actual student workload.

Furthermore, the peers notice that the reasons why many students in both programmes need 9 rather than 8 semesters until graduation are not very clear to UNS. Therefore, they consider it necessary to conduct a detailed analysis based on adequate data on this issue. Special consideration should be given to the student workload in different courses as well as to the availability of laboratory equipment. Afterwards, UNS will be able to take action to improve the situation.

The peers consider criterion 2 partly fulfilled.

3. Exams: System, concept and organisation

Criterion 3 Exams: System, concept and organisation
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Evidence:

- Self-Assessment Report
- Module descriptions
- Guide of Learning Assessment
- Websites

- Academic calendar
- Sample examination papers and Bachelor's theses

Preliminary assessment and analysis of the peers:

Each course has to determine objectives, which support the achievement of the Programme Learning Outcomes of the respective programme. Accordingly, each course must assess whether all defined learning outcomes stated in the module description have been achieved.

According to the self-assessment report, quizzes, tests, practical performances, assignments, small projects, reports and presentations are employed to assess the students' achievement of the learning outcomes. At the first meeting of a course, the students are informed about what exactly is required to pass the module. The form and length of each exam is mentioned in the course descriptions that are available to the students via UNS' homepage. It is common to hold small quizzes every two or three weeks, but there are generally no unscheduled tests. The students are informed about mid-term and final exams via the Academic Calendar. The final grade of each module is calculated based on the score of these individual kinds of assessment. The exact formula is given in the module handbook. UNS uses a grading system with the grades A, A-, B+, B, C+, C, D and E, where a C (equivalent to a Grade Point of 2) is necessary to pass a module.

Based on the academic regulation to be eligible to take final exam, students must attend at least 75% of the total course sessions. On the other hand, students must attend all lab work activities in order to get a practice examination permit. Students who have not yet reached the minimum achievement criteria have to join the remedial programme which is an additional programme that should help them improve their unsatisfactory results. The lecturers will provide several alternatives such as a second trial of exams, additional assignments, remedial learning or a peer tutor to accommodate this programme. In some instances, lectures may not allocate specific times for remedy and provide direct feedback on students' work to improve the assignment instead. The remedial program allows students to fix their shortcomings and finish the course on time with satisfactory results and is meant to shorten the study period.

The peers discuss with the students how many and what kind of exams they have to take each semester as both study programmes are divided into a huge number of small modules. They learn that for each course there is one mid-term exam and one final exam in every semester. Usually, there are additional practical assignments or quizzes. The final grade is the sum of the sub exams. The students appreciate that there are several short exams instead of one big exam as this forces them to continuously study during the entire semester and not having to solely work for one final exam at the end of the semester. The students also confirm that they are well informed about the examination schedule, the examination form and the rules for grading.

Every student is required to do a final thesis in the fourth year of studies. Prior to the actual research

work, the students are required to write a research proposal and present it in a seminar attended by lecturers and other students who form a research group. The research proposal has to be accepted by the Dean and the supervisor committee who will then appoint the research supervisors. Usually, there are 2 to 3 research supervisors for each student. One will act as the principal supervisor and the others act as co-supervisors. In case the student writes her or his thesis in collaboration with the industry, she or he is also assigned a supervisor from the industry. After completing the work on the Bachelor's thesis, the student has to present and defend the results in front of teachers and fellow students.

Overall, the peers are satisfied with the regulation of exams in the degree programmes. They also inspect a sample of examination papers and Bachelor's theses and are satisfied with their general quality.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 3:

As UNS does not comment on this criterion, the peers confirm their preliminary assessment. They consider criterion 3 fulfilled.

4. Resources

Criterion 4.1 Staff

Evidence:

- Self-Assessment Report
- Staff Handbooks
- Overviews of teaching load
- Module descriptions
- Discussions during the audit

Preliminary assessment and analysis of the peers:

At UNS, the staff members have different academic positions. There are professors, associate professors, assistant professors, and lecturers. The academic position of each staff member is based on research activities, publications, academic education, supervision of students, and other supporting activities. For example, a full professor needs to hold a PhD degree. In addition, the responsibilities and tasks of a staff member with respect to teaching, research, and supervision partly depend on the academic position.

According to the Self-Assessment Report, the teaching staff for PSP consists of 26 full-time teachers (16 with a PhD, 10 with a Master's degree). For MEEP, there are 15 teaching staff (7 with a PhD, 8 with a Master's degree, of which 5 are currently studying for a PhD). The current teacher to student ratio for PSP is 1:16, for MEEP UNS gives it as 1:6, although the latter figure appears not to be substantiated by the number of active students that is given as around 300, which would result in a ratio of around 1:20. The peers would like UNS to clarify this.

All fulltime members of the teaching staff are obliged to be involved in (1) teaching/advising, (2) research, and (3) community service. However, the workload can be distributed differently between the three areas from teacher to teacher.

UNS provides data concerning the individual teaching load per staff member for both programmes. This data shows that over the last years, the lecturers have had to teach around 26 hours per week in PSP and around 30 hours per week in MEEP. In the eyes of the peers, this teaching load is far too high to be sustainable long-term. The university admits that the national standards in this regard are by far exceeded. However, from the documents and the discussions, the causes of this problem are only partially clear to the peers. UNS teaching staff mentions that in PSP, the lecturers have additional obligations to teach physics for other study programmes, mainly in engineering. In MEEP, as has been mentioned, five teachers are currently studying for a PhD and therefore do not have any obligations, which means that others have to take over their lectures. While UNS seems partly aware of the fact that the teaching load is far too high, no solutions are in sight at the moment.

The peers emphasise that the current teaching load is a huge problem, as it results in less time for preparation of lectures, supervision of students, and research. They admire the teaching staff for doing their duties under these conditions, but urge UNS to improve the situation. The teaching load has to be brought down to tolerable levels. If there is additional teaching to be done in other departments or if there are absentee lecturers, this has to be adequately considered when planning the necessary number of staff. Consequently, the peers expect UNS to provide a concept of how the programmes under review can be managed without any structural overload of the teaching staff.

Criterion 4.2 Staff development

Evidence:

- Self-Assessment Report
- Staff handbook
- Discussions during the audit

Preliminary assessment and analysis of the peers:

According to the Self-Assessment Report, UNS encourages the continuing professional development of its staff. For this purpose, various opportunities are provided. There is a mandatory didactic training for new academic staff that encompasses curriculum design, teaching material, and innovative teaching and learning methods. Moreover, in each semester workshops are held to refresh and to deepen various didactic competences.

All teaching staff are encouraged to study abroad or to participate in international research projects and conferences in order to enhance their knowledge, increase their English proficiency and to build international networks. For this purpose, the university informs about possible scholarships to support academic mobility. Particularly for junior lecturers with a Master's degree, UNS offers systematic training to prepare them for acquiring a PhD abroad, for instance through English courses, information on foreign education systems, administrative support, and supporting (international) research collaborations.

The peers discuss with the members of the teaching staff the opportunities to develop their personal skills and learn that the teachers are satisfied with the internal qualification programme at the university, their opportunities to further improve their didactic abilities and to spend some time abroad to attend conferences, workshops or seminars.

The peers appreciate the university's efforts in this regard and consider the support mechanisms for the continuing professional development of the teaching staff adequate and sufficient. They particularly recommend to continue the efforts to strengthen the lecturer's English skills, as these are a basis for fruitful international exchange and cooperation. The peers endorse UNS's current policy to encourage their teaching staff with a Master's degree to pursue PhD degrees abroad.

Criterion 4.3 Funds and equipment
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Evidence:

- List of laboratories and equipment
- Photos and videos of the facilities
- Self-Assessment Report
- Discussions during the audit

Preliminary assessment and analysis of the peers:

The university and the faculty are mainly funded by the Indonesian government, through the tuition fees and through grants for research projects. The figures presented by the university show that the faculty's income is stable and the funding of the degree programmes is secured. The academic

staff emphasise that from their point of view, both undergraduate programmes under review receive sufficient funding for teaching and learning activities.

Students and staff can use UNS's central library, which is open from Monday to Saturday from 8 am to 9 pm. Besides regular books and journals, it provides many e-books (for example through SpringerLink, Gale, Emerald and ProQuest) as well as access to electronic journals (through EBSCO, ProQuest, Cambridge, IGI Global, Science Direct, SCOPUS, Emerald, National Library of Indonesia).

From the provided documents and videos of the laboratories, the peers deduct that there are no severe bottlenecks due to missing equipment or a lacking infrastructure. Basic technical equipment for teaching and research is available. Particularly for MEEP, this is supplemented by cooperation agreements with local industry, where students can make use of specialised equipment. During the presentation of the laboratories, the peers notice that the existing equipment represents the minimum of what is necessary to maintain the programmes, both in terms of quality and quantity. They learn that equipment for some courses is only available in a small number, so that the laboratory slots have to be spread out from morning to evening and still some difficulties remain. Consequently, the peers are convinced that the laboratory equipment should be improved in terms of both quantity and quality.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 4:

The peers thank UNS for its comments on the teaching load and the plans to improve the laboratory equipment. The university points out that the number of hours given per for teaching per lecturer in the self-assessment report does not only refer to the delivery of classes but also to preparation and evaluation activities. This mitigates the problem to a certain degree, although it still means that many lecturers are occupied with teaching duties for 30 to 40 hours per week, leaving only very little time to conduct research. This runs contrary to UNS's ambition to strengthen its research profile. Therefore, the peers are still convinced that the staff situation needs to be addressed and they ask the university to provide a concept of how they plan to do this.

The peers acknowledge that UNS is committed to improving the laboratory equipment in their programmes, including PSP and MEEP, and they take note that for MEEP, there have already been some improvements. They think that further upgrading the laboratory equipment would be extremely beneficial and therefore urge UNS to provide the necessary funding for this.

The peers consider criterion 4 partly fulfilled.

5. Transparency and documentation

Criterion 5.1 Module descriptions

Evidence:

- Module handbooks
- Webpage Ba Physics: <https://fisika.mipa.uns.ac.id/en/>
- Webpage Ba Mechanical Engineering Education: <https://ptm.fkip.uns.ac.id/en/>

Preliminary assessment and analysis of the peers:

The module handbooks for both programmes have been published on the university's website and are thus accessible to the students as well as to all stakeholders. The peers observe that they contain information on all important issues, that is responsible persons, the intended learning outcomes, the credit points awarded, the workload, the main content, prerequisites, examinations, and recommended literature.

However, module descriptions are not available for all courses. This refers to the final project and community service, but also to some regular compulsory as well as elective courses. Therefore, UNS has to rewrite the module descriptions so that they contain descriptions of all courses, including the final project.

Criterion 5.2 Diploma and Diploma Supplement

Evidence:

- Sample Transcript of Records for each degree programme
- Sample Diploma certificate for each degree programme
- Sample Diploma Supplement for each degree programme

Preliminary assessment and analysis of the peers:

The peers confirm that the students of both degree programmes under review are awarded a Diploma and a Diploma Supplement after graduation. The Diploma consists of a Diploma Certificate and a Transcript of Records. The Transcript of Records lists all courses that the graduate has completed, the achieved credit points, grades, and cumulative GPA. However, the Diploma Supplement does not contain all necessary information about the degree programmes. Information about the duration of the degree programme, the achieved credit points, the final grade, and statistical data about the student cohort are missing. Therefore, the peers urge UNS to include this information in the Diploma Supplements.

Criterion 5.3 Relevant rules

Evidence:

- Self-Assessment Report
- Websites
- Discussions during the audit
- Guide of Learning Assessment
- Internal rules of quality assurance

Preliminary assessment and analysis of the peers:

The auditors confirm that the rights and duties of both UNS and the students are clearly defined and binding. All rules and regulations are published on the university's website in and hence available to all stakeholders. In addition, the students receive all relevant course material in the language of the degree programme at the beginning of each semester.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 5:

The peers thank UNS for providing an updated diploma supplement as well as revised module handbooks for both programmes. They acknowledge that the diploma supplement now contains all the information that was missing before. The module handbooks now contain information on all courses of both programmes.

The peers consider criterion 5 fulfilled.

6. Quality management: quality assessment and development

Criterion 6 Quality management: quality assessment and development

Evidence:

- Internal rules of quality assurance
- Internal quality audit assessment form
- Questionnaire used for the evaluation of studies
- Results of tracer studies
- Self-Assessment Report
- Discussions during the audit

Preliminary assessment and analysis of the peers:

The peers discuss the quality management system at UNS with the programme coordinators. The peers learn that there is an institutional system of quality management aiming at continuously improving the degree programmes.

This system relies on internal (SPMI) as well as external (SPME) quality assurance. SPMI encompasses all activities focused on implementing measures for improving the teaching and learning quality at UNS. SPME focuses on both national and international accreditations. Every degree programme and every Higher Education Institution in Indonesia has to be accredited by the national Accreditation Agency (BAN-PT). UNS as an institution as well as both degree programmes under review have received the highest accreditation status (A) from BAN-PT.

Since UNS is striving to become an internationally acknowledged university, the reliance on students' feedback and the necessity to ensure and improve the employability of the graduates are of major importance to the coordinators. Internal evaluation of the quality of the degree programmes is mainly provided through student, alumni and employer surveys. The students give their feedback on the courses by filling out the questionnaire online. The course evaluations are conducted at the end of each semester; the questionnaire was developed by the course survey committee and includes questions with respect to the course in general and about the teachers' performance. Further surveys are carried out by gathering statistics about graduates and alumni. The discussion with the students revealed that those in charge are always eager and open for feedback aside from the official evaluations and that students have the impression that their comments are taken into consideration with regard to the further improvement of the programmes. This becomes apparent in the constant curricular revision process that is performed under participation of students and industry partners. The industry representatives confirm in the discussion that the university is eager to receive feedback about new developments and trends and the employability of their graduates.

The peers acknowledge that UNS has established a comprehensive quality assurance system that is generally suitable to identify weaknesses and to improve the degree programmes. However, they also identify some weak points. In the meetings with students and lecturers, it becomes clear that all students have to fill out the course evaluation surveys in order to be able to access their grades through UNS's IT system. The peers are worried that this may lead to a lack of validity of the results as some students may not take enough time for the survey and not fill it out with sufficient attention. Thus, they encourage UNS to reconsider this. A more serious issue appears to be that the students' feedback is not anonymous if it is directly linked to their student ID. Some students say that the teaching staff has access to the results, at least in certain cases. To facilitate honest feedback and criticism, the university has to ensure that these surveys are absolutely anonymous.

Moreover, the peers learn that while the lecturers and the head of department receive the overall results of the course evaluation surveys, there seems to be no systematic way, in which the students are informed about these and about the measures that may be taken to improve the courses. In order to close the feedback loops, they consider such a process necessary and ask UNS to establish it, if it is indeed not yet in place. The same should be ensured for all quality assurance processes, in which external and internal stakeholders participate.

As the peers understand it, the students as crucial stakeholders of the programmes are involved in the quality assurance processes in various ways, for instance through the surveys, but also through discussions with student representatives. The student representatives are, however, currently not directly involved in the decision-making processes at university, faculty and department level. The peers recommend that UNS strengthen the students' involvement in the continuous development processes. Having them actively participate in the discussions and decisions could be a good way to achieve this.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 6:

As UNS does not comment on this criterion, the peers confirm their preliminary assessment. They consider criterion 6 currently not fulfilled. To achieve full compliance, UNS has to address the mentioned issues (anonymity of course evaluation surveys, closing of feedback loops).

D Additional Documents

No additional documents needed.

E Comment of the Higher Education Institution (03.02.2022)

The following quotes the comment of the institution:

CRITERION 1.

Criterion 1.3. Curriculum

Recommendation-1:

Besides the practical university courses, PSP contains a compulsory internship in the sixth semester, MEEP an industrial internship in semester 6, and a teaching internship in semester 7. The peers appreciate that these internships are there, but consider them very important for the students' professional orientation and think that they come quite late in the programmes for this purpose.

Therefore, they recommend giving the students earlier insights into the labour market in both programmes. This could be done by adding additional internships or by using more guest lecturers from professional practice.

MEEP Response:

MEEP contains two compulsory internships, an industrial internship in semester 6 and a teaching internship in semester 7. Both compulsory internships need some prerequisite courses. For industrial internship, students should have completed at least 85 credits, especially practical workshops which spread from 1st semester until 5th semester. It also applies to teaching internships. Before the students are dispatched to take teaching internships, they have to take some basic instructional courses. Below are the structure of instructional courses supporting students in the instructional school before they go to school.

1. Semester 7

The students should have full-time teaching practice at the Vocational School for 3 months. They will be assigned in the classroom or workshop to plan, execute and evaluate the teaching and learning activities of one or more subjects. They also learn and practice the real environment academics in the school by performing other teacher activities such as student guide and counseling, supervision of extra-curricular activities, and other school administration-related activities.

2. Semester 6

The students should have a practice for micro-teaching. This is a peer teaching activity where students plan the lesson for a subject and delivery the lesson in front of a small class of a group of 8-10 students. It is expected that each student practice to teach their lesson for a minimum of 4 (four) teaching sessions in a whole semester. Before teaching practice, the students learn basic teaching skills such as opening and closing, managing the group work and discussion, classroom management, and enhancing student engagement.

3. Semester 5: Course of Curriculum Planning and Analysis

In semester 5, the students have a course in Curriculum Planning and Analysis. The learning outcome for this course is that the students are able to develop complete lesson plans for a school semester based on the analysis of the curriculum structure of the vocational school. The students should also create the instructional design which will be individually presented in front of the class.

4. Semester 5: Learning Assessment

In semester 5, the students also have a course of Learning Assessment whereas students prepare and develop the instruments for learning assessment (questions, answer keys, guidelines, and assessment rubrics), which will be individually presented in front of the class.

5. Semester 5: Learning Media

In semester 5, students have the opportunity to develop learning media & instructional design based on the basic competencies required from the curriculum, which will be individually presented in front of the class.

6. Semester 4: Learning Models & Methods

The students should have a course in Learning models and methods that enable them to understand various learning models and methods as well as analyse the implementation as a case study.

7. Semester 4: Educational Profession

In semester 4, the students could have an understanding of the required competencies, jobs & responsibilities of a professional vocational school teacher

8. Semester 3

In this course of Student Development on Semester 3, the students evaluate the physiological characters of students in various levels of school-age and gender to identify the most appropriate teaching approach.

9. Semester 2

In the course of Educational Science, the students were directed to understand the basic principle of education as well as teaching-learning activities.

However, MEEP highly appreciates ASIIN peers' recommendation to increase students' experienced learning by employing more guest lecturers from professional practice. It also complies with the governmental university's key performance indicator. In December 2021 we collaborated with our industrial partner, namely PT. Hasil Karya Indonesia, a local CNC manufacturer,

assembled a CNC milling machine which we will use to conduct a CNC/CAM practical workshop. We also invite their expert to teach our students about CNC machining.

Recommendation-2:

Since UNS has the goal to become internationally more visible and wants to further internationalize its degree programs, the peers discuss with the program coordinators and students if any classes in the programs are taught in English. The program coordinators explain that all courses are delivered in the Indonesian language, but many of the teaching materials (text-books, slides) are provided in English. As the peers consider active communication in English particularly important for the students, both for future jobs and to facilitate student mobility, they recommend offering some courses in English to practice this skill.

PSP RESPONSES

The peer group recommended an improvement of student active communication in English; therefore PSP highly values the recommendation. For the next semester of February-July 2022, the head of PSP obliges some lecturers to completely deliver the lecture in English. The courses that will be delivered in English are as follows:

1. Fundamentals of Physics II (Prof. Suparmi, Ph.D.)
2. Solid State Physics (Prof. Ari Handono R, Ph.D.)
3. Mechanics (Khairuddin, Ph.D.)
4. Electrodynamics (Prof. Cari, Ph.D.)
5. Quantum Physics I (Prof. Suparmi, Ph.D.)

Those courses are compulsory for all students; therefore, it is expected that all students may have the opportunities to practice and actively communicate in English during their studies. The assignment letter for the lectures to deliver the courses in English could be accessed through: <https://drive.google.com/file/d/1I1s8rz55IxHS1TEFKugJsvrAUNBz2qxl/view?usp=sharing>

MEEP Response

MEEP also deeply considers the recommendations of the peer group to offer some courses in English to facilitate the students' ability to communicate in English. In the next semester of February-July 2022, three MEEP lecturers are committed to delivering the lecture in English, namely:

1. Towip, MT: Ergonomics
2. Valiant Lukad, M.Pd: Learning Media
3. Dr Indah Widiastuti: Quality Control

CRITERION 2.

Recommendation

Despite this, there is still a significant percentage of students who need more than four years to finish their studies. The peers suspect that the main reason for this lies in the structure of the final thesis. As they learn during the discussions, students typically already start working on the thesis in the seventh semester, parallel to other courses, and then dedicate their entire eighth semester to it, in which no other courses are scheduled. Overall, the thesis takes six to eight months to complete. However, it is only awarded with 6 SKS (around 10 ECTS points). Although the peers are not sure, how much time the students actively spend on their final projects during this time, **this number appears to be too low.**

Therefore, the peers suggest that UNS evaluate the students' actual workload for the final projects. Based on the result, the number of credit points should be adjusted. Moreover, the peers are surprised that the final semester currently only contains the thesis and thus features far fewer credit points than an average semester, even if the thesis would be given more weight. They would like UNS to consider how this final semester can best be used, taking into account the mentioned workload evaluation

PSP Responses

In semester 8, only the final assignment/thesis is listed, however, elective courses could be offered to students. Students in semester 8 may have 10 credits, for example, consisting of 6 credits of final assignments and 4 credits of elective courses.

On average, the final project or thesis actually can be completed within 3 months with the assumption that carrying out experiments ranges from 15-20 hours per week. Considering the use of laboratory facilities for experiments/research, some students should wait while occupied by other students.

Therefore, it might delay the students to complete their final/research project by more than 3 months. In addition, along with the pandemic period that limits access to the laboratory, students need even longer time to complete their final project/thesis.

MEEP Response

The student's thesis is scheduled in semester 8 with a credit load of 6 credits (9 ECTS). Students must complete all compulsory courses before taking the thesis. In semester 8, they only take the thesis, so they can focus on completing it and graduated on time. The example to thesis timeline is shown in: <https://docs.google.com/document/d/1KIA8gfGtL5Tf9CuDL6jxySoxhUCJG5HD/edit?usp=sharing&oid=103694108815104816981&rtpof=true&sd=true>

During the COVID-19 pandemic, some thesis work was delayed due to limited gathering of the data. However, the latest data showed that 71% of students can complete their

thesis on time (https://docs.google.com/spreadsheets/d/1Sf1TQjXk8UC8TBZcT1Vex-QJPYfpJnoj0/edit?usp=sharing&rtp_of=true&sd=true)

Recommendation

The students confirm during the discussion with the peers that some opportunities for international academic mobility exist. However, they also point out that they wish for better information, more places and better-endowed scholarships for long and short-term stays abroad. The number of available places in the exchange programmes is still limited and there are restrictions due to a lack of sufficient financial support. The lack of financial support is one of the most important factors that hinder students from joining the outgoing programmes. Based on this feedback, the peers recommend increasing the effort to further internationalize UNS by establishing more international collaborations and exchange programmes (with lectures in English for incoming students), **providing more information to the students and by offering more and better-endowed scholarships**

PSP & MEEP Responses

We are deeply grateful for the recommendations provided by the peer groups for providing more information and funding for student mobility. Currently, there is some funding available for the student to have a student mobility program.

Indonesia's government (Directorate General of Higher Education (DGHE) and Ministry of Education and Culture (MoEC) also supports internationalization programs such as the Indonesian International Student Mobility Awards (IISMA). Students can participate in the exchange program in reputable universities in Europe, The USA, and Asia through this program. UNS has socialized the IISMA Program to UNS students through formal and informal events under the coordination of the International Office (<https://www.instagram.com/internationalofficeuns/> ; <https://www.youtube.com/user/iosebelasmaret>)



In addition, UNS has been conducting internationalization through inbound and outbound students. Since 2016, UNS has facilitated funding for outbound students in the form of Global Challenge Competition until present. This funding could be used for international internship programs, student exchange, short courses, summer school, online courses, etc. The latest opportunity of Global Challenge is in this link: <https://uns.ac.id/id/uns-update/uns-global-challenge-kembali-dibuka-mari-kenal-lebih-dekat-bersama-awardee.html>

The awardees for UNS Global Challenge program could be accessed through: https://docs.google.com/spreadsheets/d/1Bm5_vxgW-QkqsgnXB-FZmUCEoCGfdrtJ/edit?usp=sharing&oid=103694108815104816981&rtpof=true&sd=true

CRITERION 4.

Recommendation

UNS provides data concerning the individual teaching load per staff member for both programmes. This data shows that over the last years, the lecturers have had to teach around 26 hours per week in PSP and around 30 hours per week in MEEP. **In the eyes of the peers, this teaching load is far too high to be sustainable long-term.** The university admits that the national standards in this regard are by far exceeded. However, from the documents and the discussions, the causes of this problem are only partially clear to the peers. UNS teaching staff mentions that in PSP, the lecturers have additional obligations to teach physics for other study programmes, mainly in engineering. In MEEP, as has been mentioned, five teachers are currently studying for a PhD and therefore do not have any obligations, which means that others have to take over their

lectures. While UNS seems partly aware of the fact that the teaching load is far too high, **no solutions are in sight at the moment.**

The peers emphasize that the current teaching load is a huge problem, as it results in less time for preparation of lectures, supervision of students, and research. They admire the teaching staff for doing their duties under these conditions but urge UNS to improve the situation. The teaching load has to be brought down to tolerable levels. If there is additional teaching to be done in other departments or if there are absentee lecturers, this has to be adequately considered when planning the necessary number of staff. Consequently, the peers expect **UNS to provide a concept of how the programmes under review can be managed without any structural overload of the teaching staff**

PSP and MEEP Response

Our national standard which is ruled on the government regulation number 37 the year 2009 (<https://peraturan.bpk.go.id/Home/Details/4956/pp-no-37-tahun-2009>) stated that professional allowances from the government are provided for lecturers who carry out the academic, research, and community service-related activities (the *tridharma* of higher education) with a workload **of at least 12 (twelve) credits** and at most of 16 (sixteen) credits in each semester in accordance with their academic qualifications. The workload of academic (teaching) and research activities is at least commensurate with 9 (nine) credits. It also stated that 1 credit is equivalent to 170 minutes per week whereas teaching is allocated for planning, execution, and evaluation. Therefore, all Indonesian lecturers should have teaching & learning activities for at least 25.5 hours per week, with a maximum of 45.33 hours per week. According to the data, the average teaching hours of PSP and MEEP is still within the range provided by the standard.

As for illustration is the teaching hours of MEEP lecturers are shown in the table below. There are only 3 (three) lecturers who account for more than 40 hours of teaching per week considering their teaching subject. Due to a quite large number of students, we usually have two parallel classes. Therefore, in a 3 credit course of two parallel classes, the teaching hours allocated for the lecturers would be 6 credits.

Staff Name	Feb - July 2020	August - Jan 2021
Dr. Yuyun Estriyanto, ST., M.T.	25,5	34,0
Dr. Indah Widiastuti, ST., M.Eng.	22,7	45,3
Dr.Eng. Nyenyep Sriwardani, ST., MT.	25,5	0,0
Ir. Husin Bugis, M.Si.	25,5	39,7
Prof. Dr. Muhammad Akhyar, M.Pd.	25,5	45,3
Ngatou Rohman, S.Pd., M.Pd.	25,5	39,7
Valiant Lukad Perdana Sutrisno, S.Pd., M.Pd.	25,5	22,7
Dr. Suharno, ST., MT.	25,5	34,0
Drs. Ranto, M.T.	25,5	34,0
Danar Susilo Wijayanto, ST., M.Eng.	14,2	34,0
Budi Harjanto, ST, M.Eng	5,7	22,7
Dr.Eng. Herman Saputro, M.Pd., MT.	34,0	25,5
Dr.Eng. Nugroho Agung Pambudi, M.Eng	19,8	39,7
Towip, S.Pd., M.T.	25,5	28,3
Taufik Wisnu Saputra, S.Pd., M.Pd.	31,2	42,5
Total	380,8	519,8
Average per semester	23,8	32,5

UNS ensures that all the teaching staff allocated not more than 16 credits (equivalent to 45.33 hours per week) in each semester not only for teaching but also research, community service and managerial responsibilities.

Recommendation

During the presentation of the laboratories, the peers notice that the existing equipment represents the minimum of what is necessary to maintain the programmes, both in terms of quality and quantity. They learn that equipment for some courses is only available in a small number, so that the laboratory slots have to be spread out from morning to evening and still some difficulties remain. Consequently, the peers are convinced that **UNS must preserve the current level of equipment, but they strongly recommend to improve the laboratory equipment in terms of quantity and quality**

PSP and MEEP Response

UNS management has committed to improving the quality and quantity of laboratory equipment as shown by increasing of funds allocated for infrastructure, from 7 billion rupiahs in 2021 to 22 billion rupiahs in 2022. The fund is allocated for all study programs, including the PSP and MEEP.

For MEEP, several improvements of laboratory facilities have been made in 2021

1. Implementation of safety and health standard (standard of laboratory floor,

- safety tool, and procedure)
- 2. Additional welding machines
- 3. Upgrading of lathe machines
- 4. Additional CNC machine
- 5. Additional simulators in automotive workshop (engine stands)

CRITERION 5. TRANSPARENCY AND DOCUMENTATION

5.1. Module descriptions

Recommendation:

However, module descriptions are not available for all courses. This refers to the **final project** and **community service**, but also to some regular compulsory as well as elective courses. Therefore, UNS has to rewrite the module descriptions so that they contain descriptions of all courses, including the final project.

Response MEEP:

MEEP has provided all of course module handbook including final project, community service, and elective course respectively on the web-site. The module handbook of MEEP final project provided on <https://drive.google.com/file/d/1Lzmm3GczV6XqRQD-tnvPZAm2DzUw3T/view>, while for community service provided on <https://drive.google.com/file/d/19f2Z3nzm06tEEc8pNVeOKxKSFkw-4mu/view>.

Module handbook for all courses in MEEP: <https://drive.google.com/file/d/1iaiIFEEIgAg-MwQLpwScbQLyh-Zy19QwE/view>

Module handbook for all courses in PSP: <https://drive.google.com/file/d/1iHJQ3oPHekM5lhJe3-IIDI-ckN19S7Kx/view?usp=sharing>

Criterion 5.2 Diploma and Diploma Supplement

The peers confirm that the students of both degree programmes under review are awarded a Diploma and a Diploma Supplement after graduation. The Diploma consists of a Diploma Certificate and a Transcript of Records. The Transcript of Records lists all courses that the graduate has completed, the achieved credit points, grades, and cumulative GPA. However, the Diploma Supplement does not contain all necessary information about the degree programmes. Information about the duration of the degree programme, the achieved credit points, the final grade, and statistical data about the student cohort is missing. Therefore, the peers urge UNS to include this information in the Diploma Supplements.

PSP and MEEP Response

The diploma supplement has been updated:

<https://drive.google.com/file/d/12Ckwpj-rtKzyOcf9XcsSD94R-BclHhJd/view?usp=sharing>

F Summary: Peer recommendations (15.02.2022)

Taking into account the additional information and the comments given by UNS, the peers summarize their analysis and **final assessment** for the award of the seals as follows:

Degree Programme	ASIIN Seal	Maximum duration of accreditation	Subject-specific label	Maximum duration of accreditation
Ba Mechanical Engineering Education	With requirements for one year	30.09.2027	–	--
Ba Physics	With requirements for one year	30.09.2027	–	--

Requirements

For both degree programmes

- A 1. (ASIIN 2.1, 2.2) Analyse why many students need more than the allocated time to finish their studies, under special consideration of the effective workload and the availability of laboratory equipment. Based on the results of this analysis, appropriate action should be taken to improve the situation.
- A 2. (ASIIN 2.2) Ensure that the credits awarded for the thesis correspond with the actual workload of the students.
- A 3. (ASIIN 4.1) Provide a concept of how the degree programmes as well as research ambitions can be managed without any structural overload of the teaching staff.
- A 4. (ASIIN 4.3) Ensure that the laboratory equipment is improved in terms of quantity and quality.
- A 5. (ASIIN 6) The outcomes of the quality assurance processes have to be made known to the involved stakeholders consistently. In particular, students need to be informed about the results of the course evaluation surveys and about the measures that are taken to improve the courses.
- A 6. (ASIIN 6) The surveys that UNS conducts as part of its quality assurance system have to be anonymous.

Recommendations

For both degree programmes

- E 1. (ASIIN 1.3) It is recommended to give the students earlier insights into the labour market within the degree programmes, for example by having additional internships and guest lecturers from professional practice.
- E 2. (ASIIN 1.3, 2.1) It is recommended to strengthen the university's internationalization efforts, for instance by establishing more international collaborations and providing more information, support and funding opportunities for student mobility and by teaching more courses in English.
- E 3. (ASIIN 6) It is recommended to strengthen the students' involvement in the constant development of the programmes.

For the Mechanical Engineering Education programme

- E 4. (ASIIN 1.3) It is recommended to provide the students with more and earlier practical teaching experience.

G Comment of the Technical Committees

Technical Committee 13 – Physics (09.03.2022)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee discusses the procedure and concurs with the assessment of the peers.

The Technical Committee 13 – Physics recommends the award of the seals as follows:

Degree Programme	ASIIN Seal	Maximum duration of accreditation	Subject-specific label	Maximum duration of accreditation
Ba Physics	With requirements for one year	30.09.2027	–	--

Technical Committee 01 – Mechanical Engineering/Process Engineering (07.03.2022)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee discusses the procedure and follows the assessment of the peers without any changes.

The Technical Committee 01 – Mechanical Engineering/Process Engineering recommends the award of the seals as follows:

Degree Programme	ASIIN Seal	Maximum duration of accreditation	Subject-specific label	Maximum duration of accreditation
Ba Mechanical Engineering Education	With requirements for one year	30.09.2027	–	--

H Decision of the Accreditation Commission (18.03.2022)

Assessment and analysis for the award of the subject-specific ASIIN seal:

The Accreditation Commission discusses the procedure and concurs with the assessment of the peers.

The Accreditation Commission decides to award the following seals:

Degree Programme	ASIIN Seal	Maximum duration of accreditation	Subject-specific label	Maximum duration of accreditation
Ba Mechanical Engineering Education	With requirements for one year	30.09.2027	–	--
Ba Physics	With requirements for one year	30.09.2027	–	--

Requirements

For both degree programmes

- A 1. (ASIIN 2.1, 2.2) Analyse why many students need more than the allocated time to finish their studies, under special consideration of the effective workload and the availability of laboratory equipment. Based on the results of this analysis, appropriate action should be taken to improve the situation.
- A 2. (ASIIN 2.2) Ensure that the credits awarded for the thesis correspond with the actual workload of the students.
- A 3. (ASIIN 4.1) Provide a concept of how the degree programmes as well as research ambitions can be managed without any structural overload of the teaching staff.
- A 4. (ASIIN 4.3) Ensure that the laboratory equipment is improved in terms of quantity and quality.
- A 5. (ASIIN 6) The outcomes of the quality assurance processes have to be made known to the involved stakeholders consistently. In particular, students need to be informed about the results of the course evaluation surveys and about the measures that are taken to improve the courses.

- A 6. (ASIIN 6) The surveys that UNS conducts as part of its quality assurance system have to be anonymous.

Recommendations

For both degree programmes

- E 1. (ASIIN 1.3) It is recommended to give the students earlier insights into the labour market within the degree programmes, for example by having additional internships and guest lecturers from professional practice.
- E 2. (ASIIN 1.3, 2.1) It is recommended to strengthen the university's internationalization efforts, for instance by establishing more international collaborations and providing more information, support and funding opportunities for student mobility and by teaching more courses in English.
- E 3. (ASIIN 6) It is recommended to strengthen the students' involvement in the constant development of the programmes.

For the Mechanical Engineering Education programme

- E 4. (ASIIN 1.3) It is recommended to provide the students with more and earlier practical teaching experience.

I Fulfilment of Requirements (24.03.2023)

Analysis of the peers and the Technical Committees

Requirements

For all degree programmes

- A 1. (ASIIN 2.1, 2.2) Analyse why many students need more than the allocated time to finish their studies, under special consideration of the effective workload and the availability of laboratory equipment. Based on the results of this analysis, appropriate action should be taken to improve the situation.

Initial Treatment	
Peers	Not completely fulfilled Justification: The analysis has been done based on historic data and a survey

	<p>of the final-year students in the Physics and Mechanical Engineering study programs. The overall scope of the analysis was very restrictive, the methodology of the survey is quite poor (e.g. workload with two answers: less or more than 10 hours per week), therefore the implemented actions may be inappropriate!</p> <p>The simple results of the little survey seem to point mainly in one direction: personal time management of the student – which results in a research methodology course, more “umbrella research” and a thesis information system. The second problem “access to facilities”, which came up in the onsite visit was not addressed at all.</p> <p>The overall topic should be analysed thoroughly as soon as possible!</p> <p>If 91% of students think personal time management is the main culprit, the problem may be in the given workload.</p> <p>It is a good idea to have the umbrella research if it is executed correctly. But from the list of thesis topics in PSP, several topics are pretty specific but involve five to six students. How will they divide the workload and ensure the students write different content for their theses?</p>
TC 01	<p>Not completely fulfilled</p> <p>Vote: unanimous</p> <p>Justification: The Technical Committee discusses the procedure and follows the assessment of the peers without any changes.</p>
TC 13	<p>Not completely fulfilled</p> <p>Vote: unanimous</p> <p>Justification: The Technical Committee discusses the procedure and follows the assessment of the peers without any changes.</p>

- A 2. (ASIIN 2.2) Ensure that the credits awarded for the thesis correspond with the actual workload of the students.

Initial Treatment	
Peers	<p>Not completely fulfilled</p> <p>Justification:</p> <p>Even with the additional information provided the real workload of the bachelor-thesis is dubious:</p> <p>There was no information provided on the overall workload of the last semester. The presented survey stated around 10 hours per week with no additional courses and no explanations on additional semester despite the very doable workload.</p>

	<p>It is also stated that each student receives “6 x 70 minutes of consulting per week (about 17 hours per week)”, which does not fit to the calculation of $6 \times 70 = 420$ min, which results in $420/45 = 9,3$ hours and not 17 ...</p> <p>The survey states that 86,4% of the advisors do have more than 2 hours/week for the students, 13,6% do have less than the 2 hours. This indicates that 2 and not 6 hours of contact time is happening per week.</p> <p>The students are definitely not getting 6 hours of consultation per week, especially with the high workload of the lecturers. The actual workload for the research activities is also not known. That makes it difficult to assess whether this requirement is fulfilled.</p> <p>The prolonged thesis completion time is probably caused by a heavy workload (higher than we expected, for example, 30-40 hours per week) or many downtimes (ex., waiting for permits, waiting for lab equipment to be available, etc.), or a combination of both.</p>
TC 01	<p>Not completely fulfilled Vote: unanimous Justification: The Technical Committee discusses the procedure and follows the assessment of the peers without any changes.</p>
TC 13	<p>Not completely fulfilled Vote: unanimous Justification: The Technical Committee discusses the procedure and follows the assessment of the peers without any changes.</p>

- A 3. (ASIIN 4.1) Provide a concept of how the degree programmes as well as research ambitions can be managed without any structural overload of the teaching staff.

Initial Treatment	
Peers	<p>Not fulfilled Justification: The core of the missing research capacities is that many lecturers are occupied with teaching duties for 30 to 40 hours per week. The peer group wanted to see a (long term) concept how this situation will be improved. The Documentation for the Fulfilment of the Requirements does not include any concept to change the situation, but explains current staff-duties.</p>
TC 01	<p>Not fulfilled Vote: unanimous</p>

	Justification: The Technical Committee discusses the procedure and follows the assessment of the peers without any changes.
TC 13	Not fulfilled Vote: unanimous Justification: The Technical Committee discusses the procedure and follows the assessment of the peers without any changes.

- A 4. (ASIIN 4.3) Ensure that the laboratory equipment is improved in terms of quantity and quality.

Initial Treatment	
Peers	Fulfilled Justification: The Documentation for the Fulfillment of the Requirements includes a list of equipment bought in 2021 and 2022. This is impressive for the time being, however, there is not budget mentioned for the upcoming years.
TC 01	Fulfilled Vote: unanimous Justification: The Technical Committee discusses the procedure and follows the assessment of the peers without any changes.
TC 13	Fulfilled Vote: unanimous Justification: The Technical Committee discusses the procedure and follows the assessment of the peers without any changes.

- A 5. (ASIIN 6) The outcomes of the quality assurance processes have to be made known to the involved stakeholders consistently. In particular, students need to be informed about the results of the course evaluation surveys and about the measures that are taken to improve the courses.

Initial Treatment	
Peers	Partly fulfilled Justification: The results of the course evaluation surveys are now available via each study programme website. The measures that are taken to improve the courses are not included in the provided information, any other means of information about the measures are not mentioned in the Documentation for the Fulfillment of the Requirements.
TC 01	Partly fulfilled Vote: unanimous

	Justification: The Technical Committee discusses the procedure and follows the assessment of the peers without any changes.
TC 13	Partly fulfilled Vote: unanimous Justification: The Technical Committee discusses the procedure and follows the assessment of the peers without any changes.

A 6. (ASIIN 6) The surveys that UNS conducts as part of its quality assurance system have to be anonymous.

Initial Treatment	
Peers	Not fulfilled Justification: The survey processes have been explained at the onsite visit already and seemed to be detailed and well organized, with the only objective, that they are not anonymous, quite contrary easily very transparent down to each student. This led to the requirement of anonymous surveys. The current response documents the processes, but does not cover the main topic of anonymous surveys at all. It does not indicate any changes in the processes presented in spring 2022.
TC 01	Not fulfilled Vote: unanimous Justification: The Technical Committee discusses the procedure and follows the assessment of the peers without any changes.
TC 13	Not fulfilled Vote: unanimous Justification: The Technical Committee discusses the procedure and follows the assessment of the peers without any changes.

Decision of the Accreditation Commission (24.03.2023)

The accreditation commission discusses the procedure and follows the assessment of the technical committees.

The Accreditation Commission decides to award the following seals:

Degree programme	ASIIN-label	Subject-specific label	Accreditation until max.
Ba Physics	Requirements 1,2,3,5,6 not fulfilled		6 months prolongation
Ba Mechanical Engineering Education	Requirements 1,2,3,5,6 not fulfilled		6 months prolongation

J Fulfilment of Requirements (22.09.2023)

Analysis of the experts and the Technical Committees (08.09.2023)

Requirements

For all degree programmes

- A 7. (ASIIN 2.1, 2.2) Analyse why many students need more than the allocated time to finish their studies, under special consideration of the effective workload and the availability of laboratory equipment. Based on the results of this analysis, appropriate action should be taken to improve the situation.

Secondary Treatment	
Peers	<p>Not completely fulfilled</p> <p>Justification:</p> <p>In the Accreditation Report, it was observed that many students in both programs take 9 semesters instead of 8 to graduate, but the exact reasons for this were unclear to UNS. Although the study duration is decreasing, the original factors contributing to extended study times have not been analyzed thoroughly. The analysis focused on the length of the bachelor thesis and lab equipment availability, but it was limited and poorly structured.</p> <p>The importance of laboratory equipment is only mentioned briefly in the "Fulfillment of the Requirements," despite 58% of students expressing a need for additional tools. Unfortunately,</p>

	<p>this aspect has not been taken seriously, even in the second round of evaluation.</p> <p>While peers speculated about reasons like lab equipment availability and thesis workload, other factors such as high workloads in previous semesters or students pushing courses into later semesters might also be at play. However, from the peers' perspective, no concrete reasons were discovered or adequately researched.</p> <p>The proposal to increase student consultations per week (Physics) and strengthen lecturer research groups (MEEP) is commendable.</p>
TC 01	<p>fulfilled Vote: unanimous Justification: The Technical Committee discusses the procedure and follows the assessment of the Technical Committee Physics.</p>
TC 13	<p>Fulfilled Vote: unanimous Justification: Since the average length of study of nine semesters is only one semester longer than the prescribed number of terms for the completion of the study, the TC 13 is of the opinion that very strict standards are applied regarding this requirement. The TC 13 thinks that the documents provided by the university show that a relatively detailed analysis was carried out, particularly for the final phase of the study. Taking into account the comparatively low number of students exceeding the standard period of study, in a period in which the Corona Pandemic certainly also played a role, and given the positive trend, TC 13 considers not appropriate to assess Requirement A1 as not met and regard this as fulfilled.</p>
Initial Treatment	
Peers	<p>Not completely fulfilled Justification: The analysis has been done based on historic data and a survey of the final-year students in the Physics and Mechanical Engineering study programs. The overall scope of the analysis was very restrictive, the methodology of the survey is quite poor (e.g. workload with two answers: less or more than 10 hours per week), therefore the implemented actions may be inappropriate! The simple results of the little survey seem to point mainly in one direction: personal time management of the student – which re-</p>

	<p>sults in a research methodology course, more “umbrella re- search” and a thesis information system. The second problem “access to facilities”, which came up in the onsite visit was not addressed at all.</p> <p>The overall topic should be analysed thoroughly as soon as possible!</p> <p>If 91% of students think personal time management is the main culprit, the problem may be in the given workload.</p> <p>It is a good idea to have the umbrella research if it is executed correctly. But from the list of thesis topics in PSP, several topics are pretty specific but involve five to six students. How will they divide the workload and ensure the students write different content for their theses?</p>
TC 01	<p>Not completely fulfilled</p> <p>Vote: unanimous</p> <p>Justification: The Technical Committee discusses the procedure and follows the assessment of the peers without any changes.</p>
TC 13	<p>Not completely fulfilled</p> <p>Vote: unanimous</p> <p>Justification: The Technical Committee discusses the procedure and follows the assessment of the peers without any changes.</p>

A 8. (ASIIN 2.2) Ensure that the credits awarded for the thesis correspond with the actual workload of the students.

Secondary Treatment	
Peers	<p>Not completely fulfilled</p> <p>Justification:</p> <p>The current analysis of thesis workload is conducted through a questionable survey, raising doubts about the competence of the executing and authorizing groups. For instance, using a survey with only three options for reporting daily hours worked (more than 8 hours, 1-3 hours, 3-8 hours) does not yield reliable results.</p> <p>The theoretical workload for a student is 17 hours per week on the thesis, but the survey results indicate 66% of students working "3-8 hours/day," which translates to 15 to 40 hours per week, with 5 of work per week. As a result, the actual workload of the bachelor thesis remains unknown.</p> <p>Despite these ambiguous findings, no further discussion or promised actions to address the issue have been made.</p>
TC 01	fulfilled

	<p>Vote: unanimous</p> <p>Justification: The Technical Committee discusses the procedure and follows the assessment of the Technical Committee Physics</p>
TC 13	<p>Fulfilled</p> <p>Vote: unanimous</p> <p>Justification: The Technical Committee takes the view that the demand for high precision regarding students' workload is extremely difficult, since there are no definitely good instruments for analysing the workload and it is very difficult to obtain reliable results from a workload survey. Even an accurately calculated workload will result in a broad distribution, since students will have different workloads, especially for theses. Moreover, the Technical Committee considers that the university has derived measures from the results of the survey that are appropriate. Therefore, they conclude that the Requirement A2 is fulfilled.</p>
Initial Treatment	
Peers	<p>Not completely fulfilled</p> <p>Justification:</p> <p>Even with the additional information provided the real workload of the bachelor-thesis is dubious:</p> <p>There was no information provided on the overall workload of the last semester. The presented survey stated around 10 hours per week with no additional courses and no explanations on additional semester despite the very doable workload.</p> <p>It is also stated that each student receives "6 x 70 minutes of consulting per week (about 17 hours per week)", which does not fit to the calculation of $6 \times 70 = 420 \text{ min}$, which results in $420/45 = 9,3 \text{ hours}$ and not 17 ...</p> <p>The survey states that 86,4% of the advisors do have more than 2 hours/week for the students, 13,6% do have less than the 2 hours. This indicates that 2 and not 6 hours of contact time is happening per week.</p> <p>The students are definitely not getting 6 hours of consultation per week, especially with the high workload of the lecturers. The actual workload for the research activities is also not known. That makes it difficult to assess whether this requirement is fulfilled.</p> <p>The prolonged thesis completion time is probably caused by a heavy workload (higher than we expected, for example, 30-40 hours per week) or many downtimes (ex., waiting for permits, waiting for lab equipment to be available, etc.), or a combination of both.</p>
TC 01	<p>Not completely fulfilled</p> <p>Vote: unanimous</p>

	Justification: The Technical Committee discusses the procedure and follows the assessment of the peers without any changes.
TC 13	Not completely fulfilled Vote: unanimous Justification: The Technical Committee discusses the procedure and follows the assessment of the peers without any changes.

A 9. (ASIIN 4.1) Provide a concept of how the degree programmes as well as research ambitions can be managed without any structural overload of the teaching staff.

Secondary Treatment	
Peers	Fulfilled Justification: The university confirms that lecturer workloads are in line with regulations and provides new statistics as evidence. In addition, the UNS provides a brief development plan indicating its intention to recruit new staff in the coming years.
TC 01	fulfilled Vote: unanimous Justification: The TC 13 follows the vote of the experts.
TC 13	fulfilled Vote: unanimous Justification: The TC 13 follows the vote of the experts.
Initial Treatment	
Peers	Not fulfilled Justification: The core of the missing research capacities is that many lecturers are occupied with teaching duties for 30 to 40 hours per week. The peer group wanted to see a (long term) concept how this situation will be improved. The Documentation for the Fulfilment of the Requirements does not include any concept to change the situation, but explains current staff-duties.
TC 01	Not fulfilled Vote: unanimous Justification: The Technical Committee discusses the procedure and follows the assessment of the peers without any changes.
TC 13	Not fulfilled Vote: unanimous Justification: The Technical Committee discusses the procedure and follows the assessment of the peers without any changes.

- A 5. (ASIIN 6) The outcomes of the quality assurance processes have to be made known to the involved stakeholders consistently. In particular, students need to be informed about the results of the course evaluation surveys and about the measures that are taken to improve the courses.

Secondary Treatment	
Peers	Fulfilled Justification: The results of the course evaluation surveys are available via each study programme website. There is a brief section on measures of improvement included. It is recommended to strengthen the feedback-loops to students and to include students more intensively in all quality matters.
TC 01	fulfilled Vote: unanimous Justification: The TC 13 follows the vote of the experts.
TC 13	fulfilled Vote: unanimous Justification: The TC 13 follows the vote of the experts.
Initial Treatment	
Peers	Partly fulfilled Justification: The results of the course evaluation surveys are now available via each study programme website. The measures that are taken to improve the courses are not included in the provided information, any other means of information about the measures are not mentioned in the Documentation for the Fulfillment of the Requirements.
TC 01	Partly fulfilled Vote: unanimous Justification: The Technical Committee discusses the procedure and follows the assessment of the peers without any changes.
TC 13	Partly fulfilled Vote: unanimous Justification: The Technical Committee discusses the procedure and follows the assessment of the peers without any changes.

- A 6. (ASIIN 6) The surveys that UNS conducts as part of its quality assurance system have to be anonymous.

Secondary Treatment	
Peers	Fulfilled Justification: The topic of anonymity has obviously been addressed within the quality system. A statement at the front of the student surveys promises anonymity for the students. There is not further explanation of technical adjustments to implement this anonymity. However until further evidence comes up, the commitment of the university should be sufficient.
TC 01	Partly fulfilled Vote: unanimous Justification: The Technical Committee discusses the procedure and follows the assessment of the peers without any changes.
TC 13	Partly fulfilled Vote: unanimous Justification: The Technical Committee discusses the procedure and follows the assessment of the peers without any changes.
Initial Treatment	
Peers	Not fulfilled Justification: The survey processes have been explained at the onsite visit already and seemed to be detailed and well organized, with the only objective, that they are not anonymous, quite contrary easily very transparent down to each student. This led to the requirement of anonymous surveys. The current response documents the processes, but does not cover the main topic of anonymous surveys at all. It does not indicate any changes in the processes presented in spring 2022.
TC 01	Not fulfilled Vote: unanimous Justification: The Technical Committee discusses the procedure and follows the assessment of the peers without any changes.
TC 13	Not fulfilled Vote: unanimous Justification: The Technical Committee discusses the procedure and follows the assessment of the peers without any changes.

Decision of the Accreditation Commission (22.09.2023)

The Accreditation Committee deliberates on the process and opts to align with the viewpoint of the Technical Committees, which deem the university's efforts as adequate and the inherent issues as relatively noncritical.

J Fulfilment of Requirements (22.09.2023)

Degree programme	ASIIN-label	Subject-specific label	Accreditation until max.
Ba Physics	All requirements fulfilled		30.09.2027
Ba Mechanical Engineering Education	All requirements fulfilled		30.09.2027

Appendix: Programme Learning Outcomes and Curricula

According to the programme website, the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor's degree programme Physics:

The objectives of PSP Universitas Sebelas Maret are to produce graduates of:

1. Bachelors of Physics who are able to implement scientific principles in research and communicate the results according to ethics and academic norms
2. Bachelors of Physics who are able to implement scientific principles of Physics in certain technical fields
3. Bachelors of Physics who are able to transfer knowledge in the fields of formal, informal, and/or non-formal education
4. Bachelors of Physics who have work independence in Physics and other sciences
5. Bachelors of Physics who have managerial and human resource development skills, primarily in the field of science

Programme Learning Outcomes:

1. Mastering theoretical concepts and basic principles of classical and quantum physics
2. Mastering the principles and applications of mathematical physics and computational physics
3. Mastering the principles of Measurement, Experiment and Instrumentation
4. Mastering knowledge of technology based on physics and its application
5. Able to formulate symptoms and physical problems through analysis based on the results of observations and experiments
6. Able to produce a mathematical model or physical model in accordance with the hypothesis or forecast of the impact of the phenomenon that is the subject of discussion
7. Able to analyze various alternative solutions that exist to physical problems and conclude them for making the right decision
8. Able to predict the potential application of physical behavior in technology
9. Able to disseminate the results of problem studies and physical behavior from simple symptoms in oral form and reports or working papers according to international

standard scientific principles by utilizing Information and Communication Technology

10. Able to master basic natural science and certain fields of physics (materials, geophysics, instrumentation, theory and computation, and medical physics)
11. Able to behave as an educated physicist who is characterized by having leadership skills in group work, lifelong learning, and generic and other qualifications.

The following curriculum is presented:

Ersetzen du

PSP – Course Distribution

Sem	Cred	Number of courses	Compulsory Course Groups													
8		1					Final Project									
7		2				Community Service Program	Methodology of Physics Research II									
6		1				Student Internship										
5		10			Entrepreneurship		Methodology of Physics Research I	Physics Instrumentation	Physics Computing Practicum	Physics Computing	Quantum Physics II	Fluid Mechanics	Statistical Physics	Nuclear Physics	Nuclear Atomic Physics Practicum	
4		8						Electrodynamics	Mathematical Physics III	Mechanics II	Quantum Physics I	Solid State Physics	Waves	Advanced Physics Practicum	Atomic and Molecular Physics	
3		6				Digital Electronics	Digital Electronics Practicum	Introduction to Electrodynamics	Mathematical Physics II	Mechanics I		Thermodynamic				
2		9	Civics	Pancasila	Indonesian	Analog Electronics	Analog Electronics Practicum	Computer Programming	Mathematical Physics I	Fundamental Physics II	Experiment of Physics II					
1		10	Religion	English	Biology	Fundamental Chemistry	Experiment of Fundamental Chemistry	Fundamental Statistics	Fundamental Mathematics	Fundamental Physics I	Experiment of Physics I	Introduction to Physics Applications				
Total		47														

- : Compulsory Courses of Higher Education Law
- : Compulsory Courses of University
- : Compulsory Courses of Faculty
- : Compulsory Courses of Study Program

0 Appendix: Programme Learning Outcomes and Curricula

sem	cred	Number of courses	Elective Course Group																		
			Material Physics					Theory and Computation			Electronics and Instrumentation			Medical Physics					Geophysics and Acoustics		
8																					
7		15	Metamaterial	Material Medicine	General Relativity and Cosmology	Simulation and Modeling Physics		Quantum Physics III	Quantum Electrodynamics	Atomic Physics	System Control	Sensor	Artificial Intelligence	Fiber Optics	Robotic	Radiation Protection		Geophysical Data Processing Techniques			
6		16	Crystallography	Energy Physics	Magnetic Materials	Solar Cells	Nanosains and Material	Astrophysics	Quantum Information	Science Phylosophy	Microcomputer and Interface			Medical physics	Digital Signal Processing	Introduction Radiotherapy and Nuclear Medicine	Reactor Physics	Seismology	Vibration Analysis	Physical Acoustics	
5		11	Fabrication and Characterization of Materials	Polymer Physics	Superconductors Physics	Material Glass	Semiconductor Physics and Device		Continuou s Medium Mechanics					Medical Instrumentation	Medical Radio logy			Geophysical Survey Methods II	Practical Method Geophysical Survey III	Applied Acoustics	
4		6	Materials Thermodynamics								Electronics Workshop				Radio logical Physics	Spectroscopy		Geophysical Survey Methods I	Practical Method Geophysical Survey I		
3		5	Capita Selecta Materials												Anatomy and Physiology		Environmental Physics	Basics of Geophysics	Physical Geology		
2																					
1																					
Total		51																			

According to the programme website, the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor's degree programme Mechanical Engineering Education:

The objective of the Mechanical Engineering Education programme (MEEP) is to produce graduates as vocational educator in mechanical engineering and mechanical engineer who are:

1. Competent to integrate content knowledge, pedagogy and curriculum development in technical and vocational education by considering the national and ethical values
2. Capable to apply knowledge and skills in mechanical engineering to provide solution and positive contribution toward the society
3. Demonstrate high-level of professionalism, independent learning, and desire for life-long learning.

Programme Learning Outcomes:

PLO1: Apply ethical principles based on religious, legal, and social norms based on the noble values of the nation's culture

PLO2: Demonstrate effective works both individually and as a team member

PLO3: Demonstrate effective communication

PLO4: Commit to professional ethics and responsibilities

PLO5: Pursue a lifelong learning

PLO6: Apply content knowledge of mechanical engineering and pedagogy to design the curriculum and learning activities

PLO7: Capable to integrate the content knowledge of mechanical engineering and pedagogy to deliver learning experiences using a variety of instructional and assessment strategies in the teaching process at Vocational High Schools

PLO8: Apply the mathematical, scientific, and technical knowledge to scientifically carry out mechanical engineering related works

PLO9: Choose the appropriate material for engineering applications according to the specified technical requirements

PLO10: Design mechanical components, systems, machines, and processes according to specified technical requirements

0 Appendix: Programme Learning Outcomes and Curricula








PLO11: Select, operate, and maintain both conventional and computer-based machine tools

PLO12: Investigate engineering problems and/or engage reflective instructional cycle following a scientific procedure

The following curriculum is presented:

MEEP – Course Distribution

Sem	Courses of MEEP												
8					Final Project								
7		Student Community Service	Entrepreneurship	Educational Apprenticeship			Automation Production System	Non-Conventional Machining	Quality Control	Corrosion	Coating & Painting	Ergonomics	Jig & Fixture
							Automotive Body	Heavy Duty Technology					
6		Industrial Apprenticeship			Research Method	Lifting Machine	Cooling Technique	Management of Machine Shop	Aerodynamics	Material Technology	Steam generation System	Composite	Renewable Energy
							Vehicle Air Conditioning	Management of Auto Shop					
5	Indonesian Language	Civics Education		Curriculum Review & Development	Learning Assessment	Statistics	Basic of Vocational Education	Pump & Compressor	Turbine	CAM	Machine Design		
										Practice of Chassis	Practice of Automotive Electricity		
4			Learning Method & Strategy	Instructiona Design	Digital Classroom Management	Machine Dynamics	CAD 2	Practice of Advanced Machining	Maintenance of Industrial Machinery	Practice of Advanced Welding	CNC Machining	Casting Technology	
								Practice of Adv. Combustion Engine	Motorcycle Technology	Practice of Motorcycle Technology	Automotive Electricity	Chassis	
3			Inclusive Education	Education Professional	Mechanics of Material	Electricity & Electronics	Machine Elements	Material Science & Metallurgy	Fluid Mechanics	Practice Combustion Engine	CAD 1	Practice of Welding	
2	Religious Education		Guidance & Counseling		Welding Technology	Engineering Mechanics	Occupational Health & Safety	Thermodynamics & Heat Transfer	Combustion Engine	Industrial Metrology	Practice of Machining	Engineering Chemistry	
1	Pancasila Education	Engineering English	Educational Science	Student Development	Engineering Physics	Practice of Bench Work	Engineering Mathematics	Machining Theory	Mechanical Drawing				

	National Higher Education		Compulsory-Faculty		Elective-MEEP		Subject of Automotive
	Compulsory-UNS		Compulsory-MEEP		Subject of Manufacturing		